NetVista™

IBM

User Guide
Types 6826, 8317, 8318, and 8319

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Note

Before using this information and the product it supports, be sure to read the "Safety Information" on page v and Appendix C, "Notices" on page 35

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Safety Information

DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To connect:	**To disconnect:**
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

DANGER

Le courant électrique provenant de l'alimentation, du téléphone et des câbles de transmission peut présenter un danger.

Pour éviter tout risque de choc électrique :

- **Ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.**
- **Branchez tous les cordons d'alimentation sur un socle de prise de courant correctement câblé et mis à la terre.**
- **Branchez sur des socles de prise de courant correctement câblés tout équipement connecté à ce produit.**
- **Lorsque cela est possible, n'utilisez qu'une seule main pour connecter ou déconnecter les câbles d'interface.;**
- **Ne mettez jamais un équipement sous tension en cas d'incendie ou d'inondation, ou en présence de dommages matériels.**
- **Avant de retirer les carters de l'unité, mettez celle-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui la relient aux**

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réseaux, aux systèmes de té lécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).

- **Lorsque vous installez, que vous déplacez, ou que vous manipulez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.**

Connexion:	Déconnexion:
1. Mettez les unités hors tension.	1. Mettez les unités hors tension.
2. Commencez par brancher tous les cordons sur les unités.	2. Débranchez les cordons d'alimentation des prises.
3. Branchez les câbles d'interface sur des connecteurs.	3. Débranchez les câbles d'interface des connecteurs.
4. Branchez les cordons d'alimentation sur des prises.	4. Débranchez tous les câbles des unités.
5. Mettez les unités sous tension.	

Lithium battery notice

CAUTION:
Danger of explosion if battery is incorrectly replaced.

When replacing the battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

ATTENTION

Danger d'explosion en cas de remplacement incorrect de la batterie.

Remplacer uniquement par une batterie IBM de type ou d'un type équivalent recommandé par le fabricant. La batterie contient du lithium et peut exploser en cas de mauvaise utilisation, de mauvaise manipulation ou de mise au rebut inappropriée.

Ne pas :
- **Lancer ou plonger dans l'eau**
- **Chauffer à plus de 100°C (212°F)**
- **Réparer ou désassembler**

Mettre au rebut les batteries usagées conformément aux règlements locaux.

Modem safety information

To reduce the risk of fire, electrical shock, or injury when using telephone equipment, always follow basic safety precautions, such as:

- Never install telephone wiring during a lightning storm.

- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

Consignes de sécurité relatives au modem

Lors de l'utilisation de votre matériel téléphonique, il est important de respecter les consignes ci-après afin de réduire les risques d'incendie, d'électrocution et d'autres blessures :

- N'installez jamais de cordons téléphoniques durant un orage.
- Les prises téléphoniques ne doivent pas être installées dans des endroits humides, excepté si le modèle a été conçu à cet effet.
- Ne touchez jamais un cordon téléphonique ou un terminal non isolé avant que la ligne ait été déconnectée du réseau téléphonique.
- Soyez toujours prudent lorsque vous procédez à l'installation ou à la modification de lignes téléphoniques.
- Si vous devez téléphoner pendant un orage, pour éviter tout risque de choc électrique, utilisez toujours un téléphone sans fil.
- En cas de fuite de gaz, n'utilisez jamais un téléphone situé à proximité de la fuite.

Laser compliance statement

Some IBM Personal Computer models are equipped from the factory with a CD-ROM drive or a DVD-ROM drive. CD-ROM drives and DVD-ROM drives are also sold separately as options. CD-ROM drives and DVD-ROM drives are laser products. These drives are certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products. Elsewhere, these drives are certified to conform to the requirements of the International Electrotechnical Commission (IEC) 825 and CENELEC EN 60 825 for Class 1 laser products.

When a CD-ROM drive or a DVD-ROM drive is installed, note the following handling instructions.

CAUTION:
Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

Removing the covers of the CD-ROM drive or DVD-ROM drive could result in exposure to hazardous laser radiation. There are no serviceable parts inside the CD-ROM drive or DVD-ROM drive. **Do not remove the drive covers.**

Some CD-ROM drives and DVD-ROM drives contain an embedded Class 3A or Class 3B laser diode. Note the following statement.

DANGER

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

DANGER:

Certains modèles d'ordinateurs personnels sont équipés d'origine d'une unité de CD-ROM ou de DVD-ROM. Mais ces unités sont également vendues séparément en tant qu'options. L'unité de CD-ROM/DVD-ROM est un appareil à laser. Aux État-Unis, l'unité de CD-ROM/DVD-ROM est certifiée conforme aux normes indiquées dans le sous-chapitre J du DHHS 21 CFR relatif aux produits à laser de classe 1. Dans les autres pays, elle est certifiée être un produit à laser de classe 1 conforme aux normes CEI 825 et CENELEC EN 60 825.

Lorsqu'une unité de CD-ROM/DVD-ROM est installée, tenez compte des remarques suivantes:

ATTENTION: Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites.

L'ouverture de l'unité de CD-ROM/DVD-ROM peut entraîner un risque d'exposition au rayon laser. Pour toute intervention, faites appel à du personnel qualifié.

Certaines unités de CD-ROM/DVD-ROM peuvent contenir une diode à laser de classe 3A ou 3B. Tenez compte de la consigne qui suit:

DANGER

Rayonnement laser lorsque le carter est ouvert. Évitez toute exposition directe des yeux au rayon laser. Évitez de regarder fixement le faisceau ou de l'observer à l'aide d'instruments optiques.

Overview

Thank you for selecting an IBM® computer. Your computer incorporates many of the latest advances in computer technology and can be upgraded as your needs change.

Instructions for installing external and internal options are included in this publication. When adding an option, use these instructions along with the instructions that come along with the option.

Information resources

The *Quick Reference* that comes with your computer provides information for setting up your computer, starting the operating system, troubleshooting, hints and tips, and notices.

Access IBM provides a link to more information about your computer. Click **Start** → **Access IBM**.

If you have Internet access, the most up-to-date manuals for your computer are available from the World Wide Web. To access this information, point your browser to

http://www.ibm.com/pc/support

Type your machine type and model number in the **Quick Path** field, and click **Go**.

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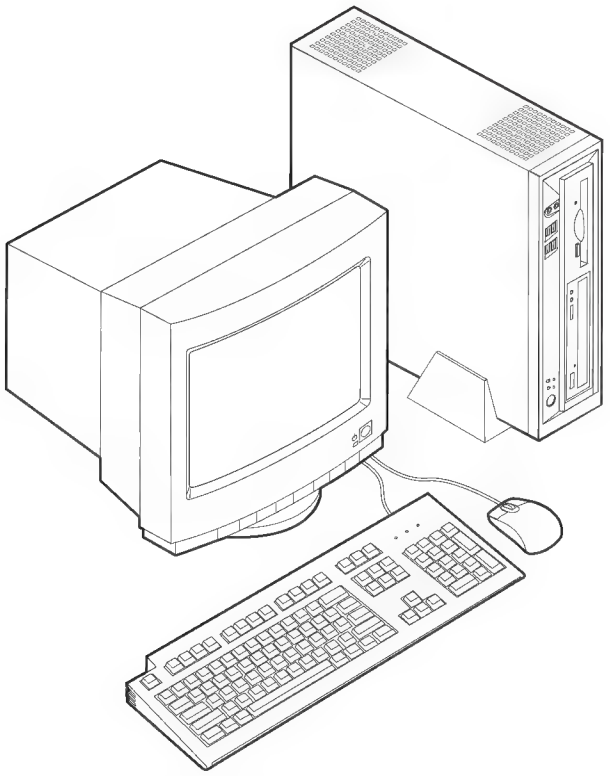
Chapter 1. Installing options



This chapter provides an introduction to the features and options that are available for your computer. You can expand the capabilities of your computer by adding memory and PCI adapters. When installing an option, use these instructions along with the instructions that come with the option.

Important

Before you install or remove any option, read "Safety Information" on page v. These precautions and guidelines will help you work safely.

Features

This section provides an overview of the computer features and preinstalled software.

Microprocessor

- Intel® Celeron™ with 128 KB of internal L2 cache memory (some models)
- Intel Pentium® 4 with 512 KB of internal L2 cache memory and Intel NetBurst™ micro-architecture (some models)

Memory

Support for two dual inline memory modules (DIMMs)

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Internal drives

- 3.5-inch, 1.44 MB diskette drive (some models)
- Hard disk drive
- EIDE CD-ROM, DVD, or CD-RW optical drive (some models)

Video subsystem

An integrated graphics controller for a Video Graphics Array (VGA) monitor

Audio subsystem

Integrated Soundmax with SPX

- Microphone and headphone connectors on the front panel
- Line in, line out, and microphone connectors on the rear panel

Connectivity

- 10/100 Mbps integrated Intel Ethernet controller that supports the Wake on LAN® feature (some models)
- 10/1000 Mbps integrated Intel Ethernet controller that supports the Wake on LAN® feature (some models)
- PCI modem (some models)

System management features

- Remote Program Load (RPL) and Dynamic Host Configuration Protocol (DHCP)
- Wake on LAN
- Wake on Ring (in the IBM Setup Utility program, this feature is called Serial Port Ring Detect for an external modem and Modem Ring Detect for an internal PCI modem)
- Remote Administration
- Automatic power-on startup
- System Management (SM) BIOS and SM software
- Ability to store POST hardware test results

Input/output features

- 25-pin, Extended Capabilities Port (ECP)/Extended Parallel Port (EPP)
- Two 9-pin serial connectors
- Six 4-pin, USB connectors (four on front panel and two on rear panel)
- PS/2® mouse connector
- PS/2 keyboard connector
- Ethernet connector
- VGA Monitor connector
- Three audio connectors (line in, line out, and microphone) on rear panel
- Two audio connectors (microphone and headphone) on front panel

Expansion

- Two 32-bit peripheral component interconnect (PCI) adapter slots
- Two DIMM sockets

Power

- 200 W power supply with manual voltage selection switch
- Automatic 50/60 Hz input frequency switching

- Advanced Power Management support
- Advanced Configuration and Power Interface (ACPI) support

Security features

- User and administrator passwords
- Support for the addition of a cable (Kennsington) lock
- Padlock loop for securing the cover
- Startup sequence control
- Startup without diskette drive, keyboard, or mouse
- Unattended start mode
- Diskette and hard disk I/O control
- Serial and parallel port I/O control
- Security profile by device

IBM preinstalled software

Your computer comes with preinstalled software. An operating system, device drivers to support built-in features, and other support programs are included.

Operating systems (preinstalled) (varies by model)

Note: Not all countries or regions will have these operating systems.

- Microsoft® Windows® XP Home
- Microsoft Windows XP Professional
- Microsoft Windows 2000

Available options

The following are some available options:

- External options
  - Parallel port devices, such as printers and external drives
  - Serial port devices, such as external modems and digital cameras
  - Audio devices, such as external speakers for the sound system
  - USB devices, such as printers, joysticks, and scanners
  - Security device, such as a cable lock
  - Monitors
- Internal options
  - System memory, called dual inline memory modules (DIMMs)
  - Peripheral component interconnect (PCI) adapters
  - CD-ROM, DVD, or CD-RW drive, hard disk drive, diskette drive, and other removable media drives

For the latest information about available options, see the following World Wide Web pages:

- http://www.ibm.com/pc/us/options/
- http://www.ibm.com/pc/support/

You can also obtain information by calling the following telephone numbers:

- Within the United States, call 1-800-IBM-2YOU (1-800-426-2968), your IBM reseller, or IBM marketing representative.
- Within Canada, call 1-800-565-3344 or 1-800-IBM-4YOU.
- Outside the United States and Canada, contact your IBM reseller or IBM marketing representative.

Specifications

This section lists the specifications for your computer.

Dimensions

Width: 12.2 inches (309 mm)

Height: 3.3 inches (84 mm)

Depth: 13.6 inches (345 mm)

Weight

Minimum configuration as shipped: 7.4 kg (16.2 lbs)

Environment

Air temperature:

Operating: 10° to 35°C (50° to 95°F)
Non-operating: 10° to 60°C (50° to 140°F)

Humidity:

Operating: 8% to 80%

Non-operating: 8% to 90%

Transit: 8% to 90%

Electrical input

Input voltage:

Low range:

Minimum: 90 V ac

Maximum: 137 V ac

Input frequency range: 57–63 Hz

Voltage switch setting: 115 V ac

High range:

Minimum: 180 V ac

Maximum: 265 V ac

Input frequency range: 47–53 Hz

Voltage switch setting: 230 V ac

Input kilovolt-amperes (kVA) (approximate) 0.25 kVA

Heat output (approximate) in British thermal units (Btu) per hour:

Minimum configuration: 257 Btu/hr (75 watts)

Maximum configuration: 463 Btu/hr (135 watts)

Airflow

Approximately 0.23 cubic meters per minute

Acoustical noise-emission values

Note: In this computer, fan speed is controlled by temperature, configuration, and software. Actual noise-emission values might be different from the stated values depending on the speed of the fan.

Average sound-pressure levels:

At operator position - 0.5 meters:

Idle: 33 dBA

Operating: 38 dBA

At bystander position - 1 meter:

Idle: 31 dBA

Operating: 37 dBA

Declared (upper limit) sound-power levels:

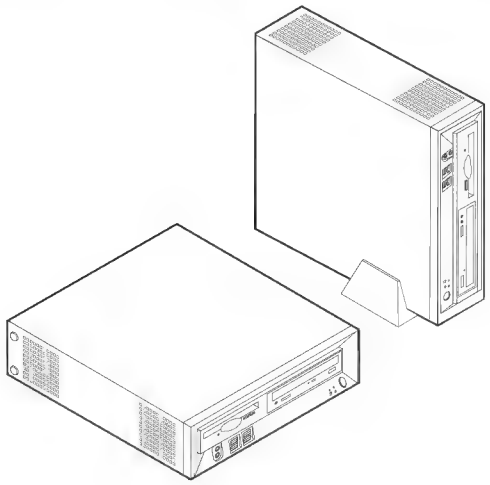
Idle: 4.6 bels

Operating: 5.0 bels

Note: These levels were measured in controlled acoustical environments according to the procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779 and are reported in accordance with ISO 9296. Actual sound-pressure levels in a given location might exceed the average values stated because of room reflections and other nearby noise sources. The declared sound-power levels indicate an upper limit, below which a large number of computers will operate.

Supported operating positions

To provide proper air flow to internal components, you must position your computer either vertically using the floor stand or horizontally as illustrated below.



Tools required

To install some options in your computer, you might need a flat-blade or Phillips screwdriver. Additional tools might be needed for certain options. See the instructions that come with the option.

Handling static-sensitive devices

Static electricity, although harmless to you, can seriously damage computer components and options.

When you add an option, do *not* open the static-protective package containing the option until you are instructed to do so.

When you handle options and other computer components, take these precautions to avoid static electricity damage:

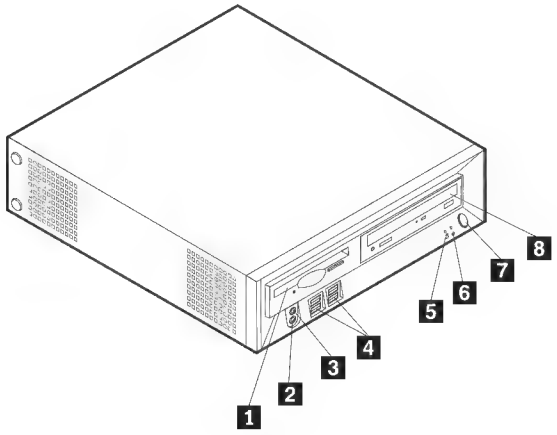
- Limit your movement. Movement can cause static electricity to build up around you.
- Always handle components carefully. Handle adapters and memory modules by the edges. Never touch any exposed circuitry.
- Prevent others from touching components.
- When you install a new option, touch the static-protective package containing the option to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity in the package and your body.
- When possible, remove the option and install it directly in the computer without setting the option down. When this is not possible, place the static-protective package that the option came in on a smooth, level surface and place the option on it.
- Do not place the option on the computer cover or other metal surface.

Installing external options

This section shows the various external connectors on your computer to which you can attach external options, such as external speakers, a printer, or a scanner. For some external options, you must install additional software in addition to making the physical connection. When adding an external option, use the information in this section to identify the required connector, and then use the instructions that come with the option to help you make the connection and install any software or device drivers that are required for the option.

Locating controls and connectors on the front of your computer

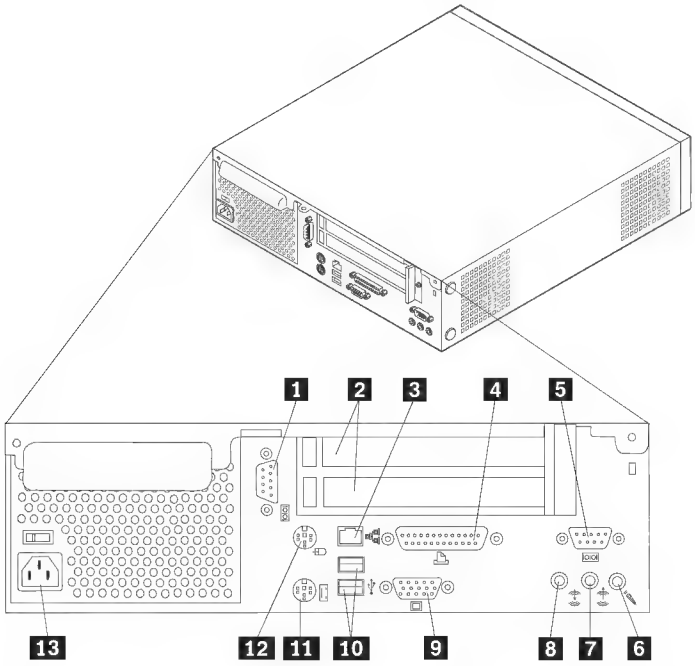
The following illustration shows locations of the controls and connectors on the front of your computer.



1	Diskette drive	5	Hard disk drive activity indicator
2	Headphone connector	6	Power-on indicator
3	Microphone connector	7	Power button
4	USB connectors (4)	8	CD or DVD drive

Locating connectors on the rear of your computer

The following illustration shows locations of connectors on the rear of your computer.



1	Serial connector	8	Audio line-out connector
2	PCI adapter slots	9	VGA monitor connector
3	Ethernet connector	10	USB connectors (2)
4	Parallel connector	11	PS/2 keyboard connector
5	Serial connector	12	PS/2 mouse connector
6	Microphone connector	13	Power cord connector
7	Audio line-in connector		

Note: Some connectors on the rear of your computer are color-coded to help determine where to connect the cables.

Obtaining device drivers

You can obtain device drivers for operating systems that are not preinstalled at http://www.ibm.com/pc/support/ on the World Wide Web. Installation instructions are provided in README files with the device-driver files.

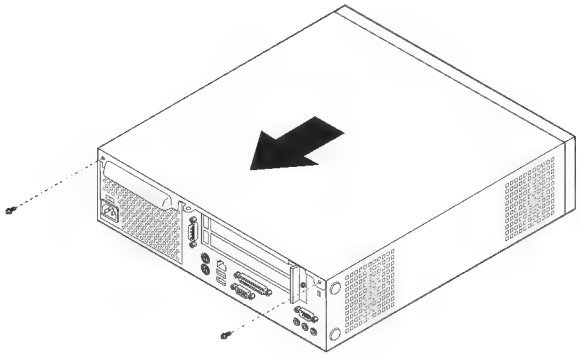
Removing the cover

Important

Read "Safety Information" on page v and "Handling static-sensitive devices" on page 6 before removing the cover.

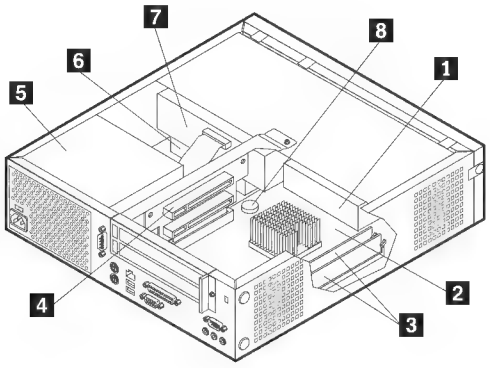
To remove the cover:

1. Shut down your operating system, remove any media (diskettes, CDs, or tapes) from the drives, and turn off all attached devices and the computer.
2. Unplug all power cords from electrical outlets.
3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer.
4. Remove the floor stand, if attached.
5. Remove the padlock or cable lock if installed.
6. Remove the two thumbscrews that secure the cover at the rear of the system unit.
7. Using the handle provided at the rear, pull the cover to the rear and lift it off.



Locating components

The following illustration will help you locate the various components in your computer.



1	Diskette drive	5	Power supply
2	System board	6	Hard disk drive
3	DIMM connectors	7	CD or DVD drive
4	PCI riser	8	Battery

Accessing system board components and drives

To access some components on the system board such as memory, the battery, and the Clear CMOS/BIOS recovery jumper, you might need to slide the diskette and CD drive tray outward to the front of the computer. You can also use this procedure to access the drives when updating to different or higher capacity drives.

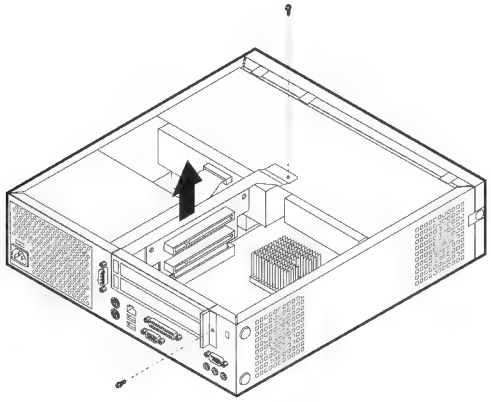
To access system board components or drives:

1. Turn off the computer.
2. Remove the cover. See "Removing the cover" on page 9
3. Remove the screw securing the drive tray to the riser card support.
4. Press in on the drive tray buttons at each side as shown.

   Notes:

   a. You might need to disconnect some cables attached to the drives to allow the drive tray to slide out far enough to access some system board components. To remove the drive tray completely, you must disconnect all the cables attached to the diskette and CD drives.

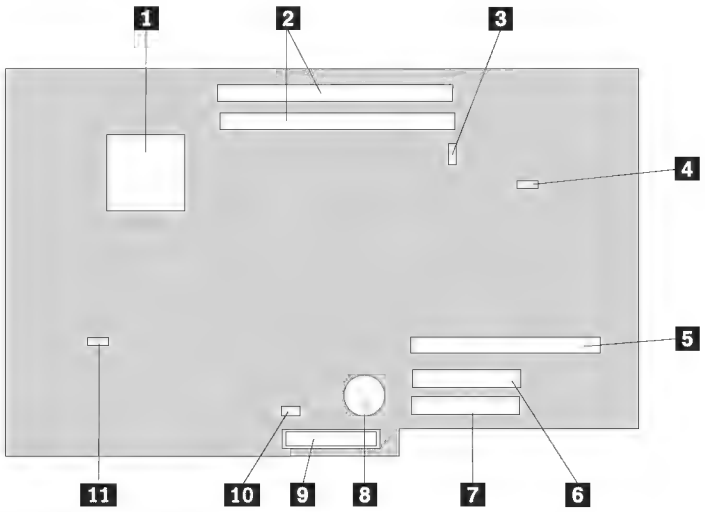
   b. Make sure you note the location of any cables that you disconnect from the drives.
5. Slide the drive tray to the front just far enough to access the necessary system board component.
6. If any PCI adapters are installed, remove the PCI riser and adapter cards. Do not remove any adapters from the riser card.



Identifying parts on the system board

The system board (sometimes called the *planar* or *motherboard*) is the main circuit board in your computer. It provides basic computer functions and supports a variety of devices that are IBM-installed or that you can install later.

The following illustration shows the locations of parts on the system board.



1	Microprocessor
2	DIMM connectors
3	Front panel connector
4	CD audio connector
5	PCI riser connector
6	Secondary IDE connector
7	Primary IDE connector
8	Battery
9	Diskette drive connector
10	Clear CMOS/BIOS recovery jumper
11	Microprocessor fan connector

Installing memory

Your computer has two connectors for installing dual inline memory modules (DIMMs) that provide up to a maximum of 1 GB of system memory.

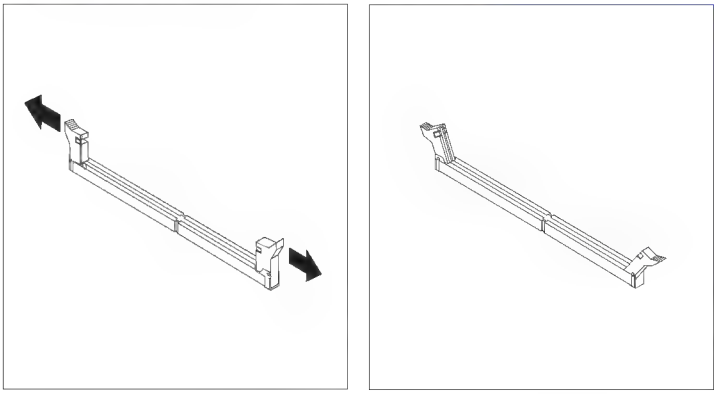
When installing memory, the following rules apply:

- Use 2.5 V, 184-pin, double data rate synchronous dynamic random access memory (DDR SDRAM), non-ECC DIMMs.
- Use 128 MB, 256 MB, or 512 MB, DIMMs in any combination.

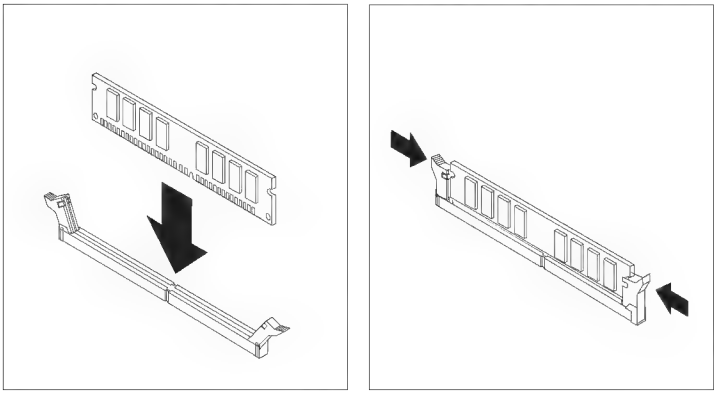
Note: Only DDR SDRAM DIMMs can be used.

To install DIMMs:

1. Access the system board. See "Accessing system board components and drives" on page 11
2. Locate the DIMM connectors. See "Identifying parts on the system board" on page 12
3. Open the retaining clips.



4. Make sure the notch in the DIMM aligns with the tab on the connector. Push or insert the memory module straight down into the connector until the retaining clips close.



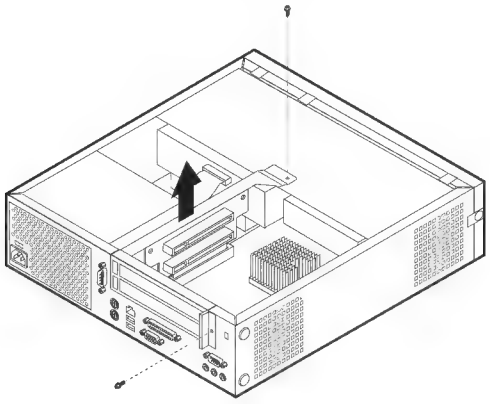
5. Replace the PCI riser and adapters if it was removed.
6. Slide the CD and diskette drive tray back into position and reconnect any cables that were disconnected. Insert the holding screw.
7. Replace the cover. See "Replacing the cover and connecting the cables" on page 19

Installing PCI adapters

This section provides information and instructions for installing and removing PCI adapters. Your computer has a riser card with two PCI expansion slots.

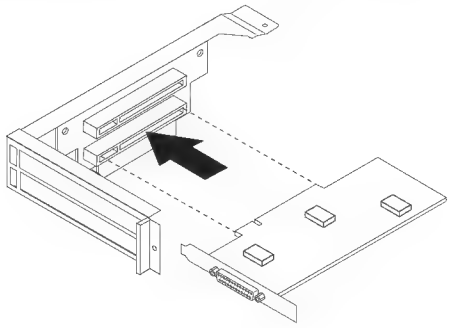
To install a PCI adapter:

1. Remove the cover. See "Removing the cover" on page 9
2. Remove the PCI riser and adapters that are already installed.



3. Remove the adapter-slot-cover latch and the slot cover for the appropriate expansion slot.
4. Remove the adapter from its static-protective package.

5. Install the adapter into the appropriate slot on the PCI riser.



6. Replace the adapter-slot-cover latch.
7. Install the PCI riser and adapters.
8. Replace the cover. See "Replacing the cover and connecting the cables" on page 19.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Replacing the cover and connecting the cables" on page 19

Installing a drive in the disk drive tray

This section provides information and instructions for installing and removing internal drives.

Internal drives are devices that your computer uses to read and store data. You can add drives to your computer to increase storage capacity and to enable your computer to read other types of media. Some of the different drives that are available for your computer are:

- Hard disk drives
- Tape drives
- CD drives or DVD drives
- Diskette and other removable media drives

When you install an internal drive, it is important to note what type and size of drive that you can install in each bay. Also, it is important to correctly connect the internal drive cables to the installed drive.

To install a drive in the disk drive tray, follow these steps.

1. Remove the cover. See "Removing the cover" on page 9.
2. Remove the disk drive tray. See "Accessing system board components and drives" on page 11 and "Locating components" on page 10.
3. Remove the bay panel from the drive bay by inserting a flat-blade screwdriver at the end and gently prying it loose.
4. Remove the metal shield from the drive bay by inserting a flat-blade screwdriver into one of the slots and gently prying it loose.
5. Install the drive into the bay. Align the screw holes, and insert the two screws.

6. Reinstall the disk drive tray. Go to "Connecting a diskette drive" or "Connecting an IDE CD drive"

Replacing the hard disk drive

To replace the hard disk drive, follow these steps.

1. Remove the cover. See "Removing the cover" on page 9
2. Remove the disk drive tray. See "Accessing system board components and drives" on page 11
3. Disconnect the signal and power cables from the existing hard disk drive and remove the drive. Do not disconnect the signal cable from the system board.
4. Install the new hard disk drive and connect the signal and power cables to the drive.
5. Reinstall the disk drive tray and connect the signal and power cables for the diskette and CD drives.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Replacing the cover and connecting the cables" on page 19

Connecting an IDE CD drive

1. Locate the three-connector signal cable that came with your computer or with the new drive.
2. Locate the secondary IDE connector on the system board. See "Identifying parts on the system board" on page 12
3. Connect one end of the signal cable to the drive and the other to the secondary IDE connector on the system board.
4. Your computer has extra power connectors for additional drives. Connect a power connector to the drive.
5. If you have a CD-ROM drive audio cable, connect it to the drive and the system board. For the location of the CD audio connector, see "Identifying parts on the system board" on page 12

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Replacing the cover and connecting the cables" on page 19

Connecting a diskette drive

1. Locate the three-connector signal cable that came with your computer or with the new drive.
2. Locate the diskette drive connector on the system board. See "Identifying parts on the system board" on page 12
3. Connect one end of the signal cable to the drive and the other to the diskette drive connector on the system board.
4. Your computer has extra power connectors for additional drives. Connect a power connector to the drive.

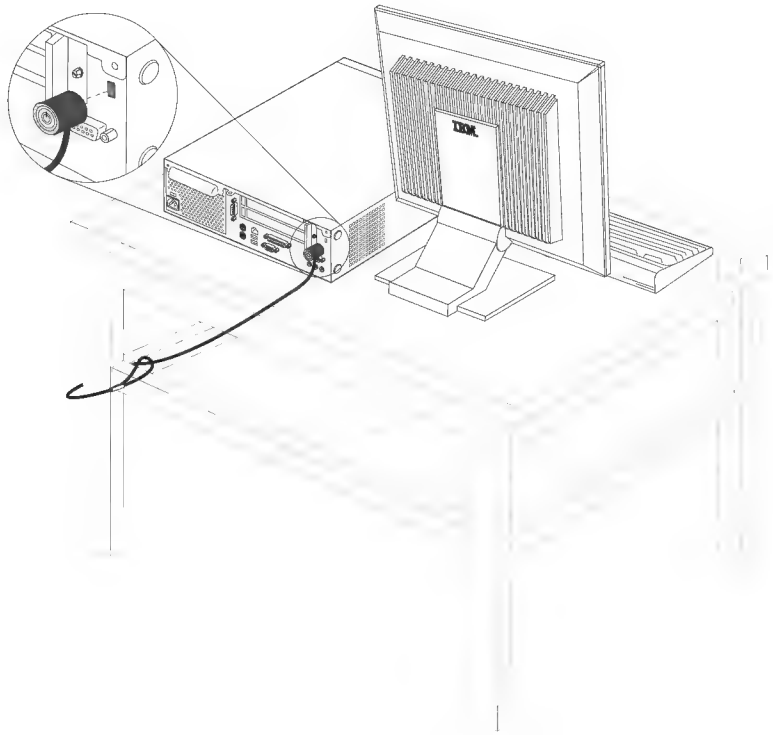
What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Replacing the cover and connecting the cables" on page 19

Installing a cable lock

To help to protect against theft, you can install an optional cable lock to secure your computer to a desk, table, or other fixture. This type of cable lock also automatically locks the computer cover to the chassis. The cable-lock latch on your computer accommodates the same type of cable lock used with many laptop computers. You can order cable locks directly from IBM. For more information, see *Finding options from IBM* in Access IBM.

See the following illustration for cable lock installation.



Changing the battery

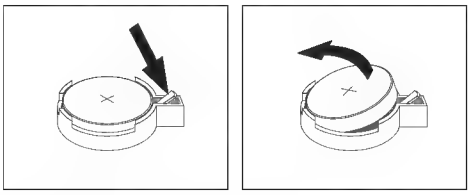
Your computer has a special type of memory that maintains the date, time, and settings for built-in features, such as parallel-port assignments (configuration). A battery keeps this information active when you turn off the computer.

The battery normally requires no charging or maintenance throughout its life; however, no battery lasts forever. If the battery fails, the date, time, and configuration information (including passwords) are lost. An error message is displayed when you turn on the computer.

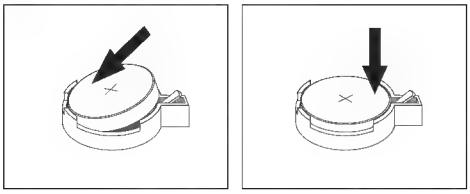
Refer to "Lithium battery notice" on page vi for information about replacing and disposing of the battery.

To change the battery:

1. Refer to "Identifying parts on the system board" on page 12 and locate the battery.
2. Remove the PCI riser and any cables that impede access to the battery.
3. Remove the old battery.



4. Install the new battery.



5. Slide both drive trays back into the computer and secure with the holding screws. Reconnect any cables that were disconnected.
6. Install the PCI riser and adapters if removed.
7. Replace the cover, and connect the cables. See "Replacing the cover and connecting the cables" on page 19.

   Note: When the computer is turned on for the first time after battery replacement, an error message might be displayed. This is normal after replacing the battery.
8. Turn on the computer and all attached devices.
9. Use the IBM Setup Utility program to set the date and time and any passwords.

Erasing a lost or forgotten password (clearing CMOS)

This section applies to lost or forgotten passwords. For more information about lost or forgotten passwords, go to Access IBM.

To erase a forgotten password:

1. Refer to "Accessing system board components and drives" on page 11.
2. Locate the Clear CMOS/BIOS recovery jumper on the system board. See "Identifying parts on the system board" on page 12.
3. Move the jumper from the standard position (pins 1 and 2) to the maintenance or configure position (pins 2 and 3).
4. Slide both drive trays back into the computer and secure with the holding screws. Reconnect any cables that were disconnected.
5. Install the PCI riser and adapters.
6. Replace the cover, and connect the power cable. See "Replacing the cover and connecting the cables" on page 19.

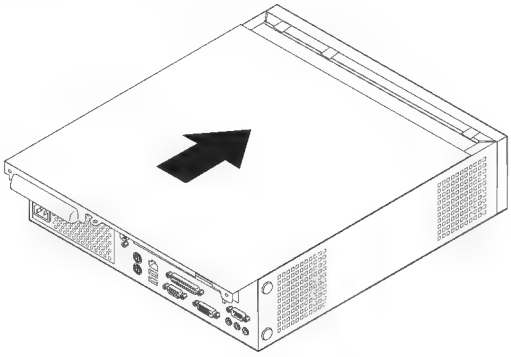
7. Restart the computer, leave it on for approximately 10 seconds, and then turn off the computer.
8. Repeat step 1.
9. Move the jumper back to the standard (pins 1 and 2).
10. Reassemble the computer and replace the cover. See "Replacing the cover and connecting the cables".

Replacing the cover and connecting the cables

After working with options, you need to install any removed parts, replace the cover, and reconnect cables, including telephone lines and power cords. Also, depending on the option that is installed, you might need to confirm the updated information in the IBM Setup Utility program.

To replace the cover and connect cables to your computer:

1. Ensure that all components have been reassembled correctly and that no tools or loose screws are left inside your computer.
2. Clear any cables that might impede the replacement of the cover.
3. Place the cover over the computer and slide it to the rear until it is fully closed. Secure the cover with the two thumbscrews.



4. If your computer is being placed in the vertical position, attach the floor stand.

   Attention: To prevent overheating and possible component damage, always attach the floor stand when placing the computer in the vertical position.
5. Reconnect the external cables and power cords to the computer. See "Locating connectors on the rear of your computer" on page 8
6. To update the configuration, see Chapter 2, "Using the IBM Setup Utility" on page 21.

Chapter 2. Using the IBM Setup Utility

The IBM Setup Utility program is stored in the electrically erasable programmable read-only memory (EEPROM) of your computer. The IBM Setup Utility program is used to view and change the configuration settings of your computer, regardless of which operating system you are using. However, the operating-system settings might override any similar settings in the IBM Setup Utility program.

Starting the IBM Setup Utility program

To start the IBM Setup Utility program, do the following:

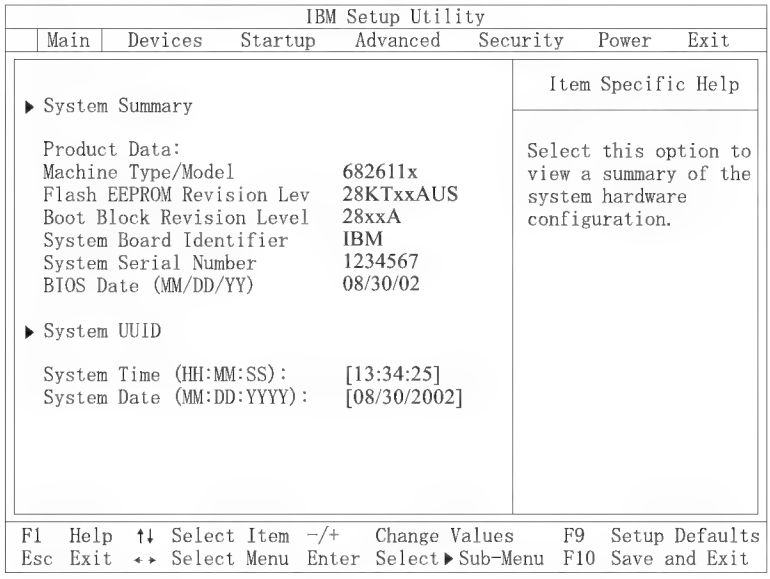
1. If your computer is already on when you start this procedure, shut down the operating system and turn off the computer.
2. Turn on your computer and look for the following prompt on the logo screen:

   `(To interrupt normal startup, press Enter)`

   Press Enter when you see the prompt. The Startup Interrupt Menu is displayed.
3. Press F1 to start the IBM Setup Utility.

   Note: If a user password is set, you must type the password to continue. If an administrator password has been set, you cannot make any changes to configuration using the IBM Setup Utility program until you type your administrator password. See "Using passwords" on page 22 for more information.

The IBM Setup Utility might start automatically when POST detects that hardware has been removed or new hardware has been installed in your computer. A sample of the first IBM Setup Utility screen is shown here.


IBM Setup Utility
Main Devices Startup Advanced Security Power Exit
Item Specific Help
▶ System Summary
Product Data:
Machine Type/Model 682611x
Flash EEPROM Revision Lev 28KTxxAUS
Boot Block Revision Level 28xxA
System Board Identifier IBM
System Serial Number 1234567
BIOS Date (MM/DD/YY) 08/30/02
Select this option to view a summary of the system hardware configuration.
▶ System UUID
System Time (HH:MM:SS): [13:34:25]
System Date (MM:DD:YYYY): [08/30/2002]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

Viewing and changing settings

The IBM Setup Utility program menu lists items that identify system configuration topics.

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When working with the IBM Setup Utility program menu, you must use the keyboard. The keys used to perform various tasks are displayed at the bottom of each screen.

Exiting from the IBM Setup Utility program

When you finish viewing or changing settings, press Esc to return to the IBM Setup Utility program menu (you might have to press Esc several times). If you want to save the new settings, select **Save Settings** or **Save and exit the Setup Utility**. Otherwise, your changes will not be saved.

Using passwords

You can use passwords to provide security for your computer and data. There are two kinds of passwords: a user password and an administrator password. You do not have to set a password of either type to use your computer. However, if you decide to set either one, read the following sections.

User password

The user password feature deters unauthorized persons from gaining access to your computer.

Administrator password

Setting an administrator password deters unauthorized persons from changing configuration settings. If you are responsible for maintaining the settings of several computers, you might want to set an administrator password.

After you set an administrator password, a password prompt is displayed each time you try to access the IBM Setup Utility program. If you type the wrong password, you will see an error message. If you type the wrong password three times, you must turn the computer off and start again.

If both the user and administrator passwords are set, you can type either password. However, to change any configuration settings, you must use your administrator password.

Setting, changing, and deleting a password

To set, change, or delete a password, do the following:

Note: A password can be any combination of up to seven characters (A- Z, a-z, and 0-9).

1. Start the IBM Setup Utility program (see "Starting the IBM Setup Utility program" on page 21).
2. From the IBM Setup Utility program menu, select **Security → Set Passwords**. Read the information displayed on the right side of the screen.

Using Security Profile by Device

Security Profile by Device is used to enable or disable user access to the following devices:

IDE controller	When this feature is set to **Disable**, all devices connected to the IDE controller (such as hard disk drives or the CD-ROM drive) are disabled and will not be displayed in the system configuration.
Diskette Drive Access	When this feature is set to **Disable**, the diskette drive cannot be accessed.
Diskette Write Protect	When this feature is set to **Enable**, all diskettes are treated as if they are write-protected.

To set Security Profile by Device, do the following:

1. Start the IBM Setup Utility program (see "Starting the IBM Setup Utility program" on page 21).
2. From the IBM Setup Utility program menu, select **Security**.
3. Select **Security Profile by Device**.
4. Select the desired devices and settings and press Enter.
5. Return to the IBM Setup Utility program menu and select **Exit** and then **Save Settings** or **Save and exit the Setup Utility**.

   Note: If you do not want to save the settings, select **Exit the Setup Utility without saving**.

Selecting a startup device

If your computer does not start up (boot) from a device such as the CD-ROM, diskette, or hard disk as expected, use one of the following procedures to select a startup device.

Selecting a temporary startup device

Use this procedure to startup from any boot device.

Note: Not all CDs, hard disks, and diskettes are startable (bootable).

1. Turn off your computer.
2. Turn on your computer and look for the following prompt on the logo screen:

   ```
   (To interrupt normal startup, press Enter)
   ```

   Press Enter when you see the prompt.
3. When the Startup Interrupt Menu displays, press F12.
4. Select the desired startup device from the Startup Device menu and press Enter to begin.

Note: Selecting a startup device from the Startup Device menu does not permanently change the startup sequence.

Changing the startup device sequence

To view or permanently change the configured startup device sequence, do the following:

1. Start the IBM Setup Utility program (see "Starting the IBM Setup Utility program" on page 21).
2. Select **Startup**.
3. Select **Startup Sequence**. See the information displayed on the right side of the screen.
4. Select the devices for the Primary Startup Sequence, the Automatic Startup Sequence, and the Error Startup Sequence.
5. Select **Exit** from the IBM Setup Utility menu and then **Save Settings** or **Save and exit the Setup Utility**.

If you have changed these settings and want to return to the default settings, select **Load Default Settings** on the Exit menu.

Appendix A. Updating POST/BIOS

This appendix contains information about updating POST/BIOS and how to recover from a POST/BIOS update failure.

POST/BIOS

POST/BIOS are the basic layer of software that is built into your computer. They include the power-on self-test (POST), the basic input/output system (BIOS) code, and the IBM Setup Utility program. POST is a set of tests and procedures that is performed each time you turn on your computer. BIOS is a layer of software that translates instructions from other layers of software into electrical signals that the computer hardware can understand. You can use the IBM Setup Utility program to view and change the configuration and setup of your computer.

Your computer system board has a module called *electrically erasable programmable read-only memory* (EEPROM, also referred to as *flash memory*). You can easily update POST, BIOS, and the IBM Setup Utility program by starting your computer using a flash update diskette or by running a special update program from your operating system.

IBM might make changes and enhancements to the POST/BIOS. When updates are released, they are available as downloadable files on the World Wide Web (see the *Quick Reference*). Instructions for using the POST/BIOS updates are available in a .txt file that is included with the update files. For most models, you can download either an update program to create a system-program-update (flash) diskette or an update program that can be run from the operating system.

Updating (flashing) BIOS from a diskette

1. Insert a POST/BIOS update (flash) diskette into the diskette drive (drive A) in your computer. POST/BIOS updates are available at http://www.ibm.com/pc/support/ on the World Wide Web.
2. Turn on the computer. If it is on already, you must turn it off and back on again. The update begins.

Updating (flashing) BIOS from your operating system

Note: Due to constant improvements being made to the IBM Web site, Web page content (including the links referenced in the following procedure) is subject to change.

1. From your browser, type http://www.pc.ibm.com/support in the address field and press Enter.
2. Click **NetVista and NetVista Thin Client**.
3. Click **NetVista Personal Computer**.
4. Click **Downloadable files**.
5. Under Select your product, choose your machine type and click **Go**.
6. In Downloadable file by category, click **BIOS**.
7. Under Download files - BIOS by date, click your machine type.
8. Scroll down and look for a .txt file that has instructions for Flash BIOS update from the operating system. Click the .txt file.

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9. Print these instructions. This is very important since they are not on the screen after the download begins.
10. From your browser, Click **Back** to return to the list of files. Carefully follow the printed instructions to download, extract, and install the update.

Recovering from a POST/BIOS update failure

If power to your computer is interrupted while POST/BIOS is being updated (flash update), your computer might not restart correctly. If this happens, perform the following procedure to recover:

1. Turn off the computer and any attached devices, such as printers, monitors, and external drives.
2. Unplug all power cords from electrical outlets, and remove the cover. See "Removing the cover" on page 9.
3. Locate the Clear CMOS/BIOS Recovery jumper on the system board. See "Identifying parts on the system board" on page 12.
4. If necessary, refer to "Accessing system board components and drives" on page 11 to gain access to the Clear CMOS/BIOS Recovery jumper.
5. Remove any cables or adapters that impede access to the Clear CMOS/BIOS Recovery jumper.
6. Move the jumper from the standard position (pins 1 and 2) to pins 2 and 3.
7. Replace any cables or adapters that were removed.
8. Replace the cover. See "Replacing the cover and connecting the cables" on page 19.
9. Reconnect the power cords for the computer and monitor to electrical outlets.
10. Insert the POST/BIOS update (flash) diskette into drive A, and turn on the computer and the monitor.
11. During the update session there will be no video. You will hear a long beep when recovery is completed. Remove the diskette from the diskette drive, and turn off the computer and monitor.
12. Unplug the power cords from electrical outlets.
13. Remove the cover. See "Removing the cover" on page 9.
14. Remove any cables or adapters that impede access to the Clear CMOS/BIOS Recovery jumper.
15. Replace the Clear CMOS/BIOS Recovery jumper to its original position.
16. Replace any cables or adapters that were removed.
17. Replace the cover and reconnect any cables that were disconnected.
18. Turn on the computer to restart the operating system.

Appendix B. Manual modem commands

The following section lists commands for manually programming your modem.

Commands are accepted by the modem while it is in Command Mode. Your modem is automatically in Command Mode until you dial a number and establish a connection. Commands may be sent to your modem from a PC running communication software or any other terminal devices.

All commands sent to the modem must begin with **AT** and end with **ENTER**. All commands may be typed in either upper or lower case, but not mixed. To make the command line more readable, spaces may be inserted between commands. If you omit a parameter from a command that requires one, it is just like specifying a parameter of **0**.

Example:

ATH [ENTER]

Basic AT commands

In the following listings, all default settings are printed in **bold text**.

Command		Function
A		Manually answer incoming call.
A/		Repeat last command executed. **Do not** precede **A/** with AT or follow with ENTER.
D_		**0 - 9, A-D, # and ***
	L	last number redial
	P	pulse dialing
		Note: Pulse dialling is not supported for Australia, New Zealand, Norway, and South Africa.
	T	**touch-tone dialing**
	W	wait for second dial tone
	,	pause
	@	wait for five seconds of silence
	!	flash
	;	return to Command Mode after dialing
DS=n		Dial one of the four telephone numbers (n=0-3) stored in the modem non-volatile memory.
E_	E0	Commands are not echoed
	E1	**Commands are echoed**
+++		Escape Characters - Switch from Data Mode to Command Mode (T.I.E.S. Command)
H_	H0	Force modem on-hook (hang up)

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Command		Function
	H1	Force modem off-hook (make busy) **Note: H1 command is not supported for Italy**
I_	I0	Display product-identification code
	I1	Factory ROM checksum test
	I2	Internal memory test
	I3	Firmware ID
	I4	Reserved ID
L_	L0	Low speaker volume
	L1	**Low speaker volume**
	L2	Medium speaker volume
	L3	High speaker volume
M_	M0	Internal speaker off
	M1	**Internal speaker on until carrier detected**
	M2	Internal speaker always on
	M3	Internal speaker on until carrier detected and off while dialing
N_		Included for compatibility only, provides no effect
O_	O0	Return to Data Mode
	O1	Return to Data Mode and initiate an equalizer retrain
P		**Set Pulse dial as default**
Q_	Q0	Modem sends responses
Sr?		Read and display value in register r.
Sr=n		Set register r to value n (n = 0-255).
T		**Set Tone Dial as default**
V_	**V0**	**Numeric responses**
	V1	**Word responses**
W_	**W0**	**Report DTE speed only**
	W1	Report line speed, error correction protocol, and DTE speed.
	W2	Report DCE speed only
X_	X0	Hayes Smartmodem 300 compatible responses/blind dialing.
	X1	Same as X0 plus all CONNECT responses/blind dialing
	X2	Same as X1 plus dial tone detection
	X3	Same as X1 plus busy detection/blind dialing
	X4	All responses and dial tone and busy **signal detection**
Z_	Z0	Reset and retrieve active profile 0
	Z1	Reset and retrieve active profile 1

Extended AT commands

Command		Function
&C_	&C0	Force Carrier Detect Signal High (ON)
	&C1	**Turn on CD when remote carrier is present**
&D_	&D0	**Modem ignores the DTR signal**
	&D1	Modem returns to Command Mode after DTR toggle
	&D2	**Modem hangs up, returns to the Command Mode after DTR toggle**
	&D3	Resets modem after DTR toggle
&F_	&F	Recall factory default configuration
&G_	**&G0**	**Guard tone disabled**
	&G1	Guard tone disabled
	&G2	1800 Hz guard tone
&K_	&K0	Disable flow control
	&K3	**Enable RTS/CTS hardware flow control**
	&K4	Enable XON/XOFF software flow control
	&K5	Enable transparent XON/XOFF flow control
	&K6	Enable both RTS/CTS and XON/XOFF flow control
&M_	**&M0**	Asynchronous operation
&P_	**&P0**	**US setting for off-hook-to-on-hook ratio**
	&P1	UK and Hong Kong off-hook-to-on-hook ratio
	&P2	Same as &P0 setting but at 20 pulses per minute
	&P3	Same as &P1 setting but at 20 pulses per minute
&R_	&R0	Reserved
	&R1	**CTS operates per flow control requirements**
&S_	**&S0**	**Force DSR Signal High (ON)**
	&S1	DSR off in command mode, on in on-line mode
&T_	&T0	Ends test in progress
	&T1	Perform Local Analog Loopback Test
	&T3	Perform Local Digital Loopback Test
	&T4	**Grant Remote Digital Loopback Test request by remote modem**
	&T5	Deny Remote Digital Loopback Test request
	&T6	Perform a Remote Digital Loopback Test
	&T7	Perform a Remote Digital Loopback Test and Self-Test
	&T8	Perform Local Analog Loopback Test and Self-Test
&V	&V0	Displays Active and Stored Profiles

Command		Function
	&V1	Display Last Connection Statistics
&W_	&W0	Stores the active profile as Profile 0
	&W1	Stores the active profile as Profile 1
%E_	**%E0**	**Disable auto-retrain**
	%E1	Enable auto-retrain
+MS?		Displays the current Select Modulation settings
+MS=?		Displays a list of supported Select Modulation options
+MS=a,b,c,e,f		Select modulation where: **a**=0, 1, 2, 3, 9, 10, 11, 12, 56, 64, 69; **b**=0-1; **c**=300-56000; **d**=300-56000; **e**=0-1; and **f**=0-1. **A, b, c, d, e, f** default=**12, 1, 300, 56000, 0, 0.** Parameter **"a"** specifies the modulation protocol desired where: 0=V.21, 1=V.22, 2=V.22bis, 3=V.23, 9=V.32, 10=V.32bis, 11=V.34, 12=V.90,K56Flex,V.34.....,56=K 56Flex, V.90,V.34....., 64=Bell 103, and 69=Bell 212. Parameter "b" specifies automode operations where: 0=automode disabled, 1= automode enabled with V.8/V.32 Annex A. Parameter **"c"** specifies the minimum connection data rate (300- 56000). Parameter **"d"** specifies the maximum connection rate (300-56000); Parameter **"e"** specifies the codec type (0= Law, and 1=A-Law). Parameter **"f"** specifies "robbed bit" signaling detection (0=detection disabled 1=detection enabled)

MNP/V.42/V.42bis/V.44 commands

Command		Function
%C_	%C0	Disable MNP Class 5 and V.42bis data compression
	%C1	Enable MNP Class 5 data compression only
	%C2	Enable V.42bis data compression only
	%C3	**Enable MNP Class 5 and V.42bis data compression**
&Q_	&Q0	Direct data link only (same as \N1)
	&Q5	**V.42 data link with fallback options**
	&Q6	Normal data link only (same as \N0)
+DS44=0, 0		Disable V.44
+DS44=3, 0		Enable V.44
+DS44?		Current values
+DS44=?		List of support values

Fax Class 1 commands

+FAE=n	Data/Fax Auto Answer
+FCLASS=n	Service Class
+FRH=n	Receive data with HDLC framing
+FRM=n	Receive data
+FRS=n	Receive silence
+FTH=n	Transmit data with HDLC framing
+FTM=n	Transmit data
+FTS=n	Stop transmission and wait

Fax Class 2 commands

+FCLASS=n	Services class.
+FAA=n	Adaptive answer.
+FAXERR	Fax error value.
+FBOR	Phase C data bit order.
+FBUF?	Buffer size (read only).
+FCFR	Indicate confirmation to receive.
+FCLASS=	Service class.
+FCON	Facsimile connection response.
+FCIG	Set the polled station identification.
+FCIG:	Report the polled station identification.
+FCR	Capability to receive.
+FCR=	Capability to receive.
+FCSI:	Report the called station ID.
+FDCC=	DCE capabilities parameters.
+FDCS:	Report current session.
+FDCS=	Current session results.
+FDIS:	Report remote capabilities.
+FDIS=	Current sessions parameters.
+FDR	Begin or continue phase C receive data.
+FDT=	Data transmission.
+FDTC:	Report the polled station capabilities.
+FET:	Post page message response.
+FET=N	Transmit page punctuation.
+FHNG	Call termination with status.
+FK	Session termination.
+FLID=	Local ID string.
+FLPL	Document for polling.
+FMDL?	Identify model.
+FMFR?	Identify manufacturer.

+FPHCTO	Phase C time out.
+FPOLL	Indicates polling request.
+FPTS:	Page transfer status.
+FPTS=	Page transfer status.
+FREV?	Identify revision.
+FSPT	Enable polling.
+FTSI:	Report the transmit station ID.

Voice commands

#BDR	Select Baud Rate
#CID	Enable Caller ID detection and reporting format
#CLS	Select Data, Fax or Voice/Audio
#MDL?	Identify Model
#MFR?	Identify Manufacturer
#REV?	Identify Revision Level
#TL	Audio output transmit level
#VBQ?	Query Buffer Size
#VBS	Bits per sample (ADPCM or PCM)
#VBT	Beep Tone Timer
#VCI?	Identify Compression Method
#VLS	Voice line select
#VRA	Ringback goes away timer
#VRN	Ringback never came timer
#VRX	Voice Receive Mode
#VSDB	Silence deletion tuner
#VSK	Buffer skid setting
#VSP	Silence detection period
#VSR	Sampling rate selection
#VSS	Silence deletion tuner
#VTD	DTMF tone reporting capability
#VTM	Enable timing mark placement
#VTS	Generate tone signals
#VTX	Voice transmit mode

Attention Switzerland User:
If your Swisscom phone line does not have Taxsignal switched OFF, modem function may be impaired. The impairment may be resolved by a filter with the following specifications:

Telekom PTT SCR-BE
Taximpulssperrfilter-12kHz
PTT Art. 444.112.7
Bakom 93.0291.Z.N

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